

Application Serial No. 10/823,105
Reply to office action of July 16, 2007

PATENT
Docket: CU-3682

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Amendments To The Claims

The listing of claims presented below will replace all prior versions, and listings, of claims in the application.

Listing of claims:

1-7. (cancelled)

8. (currently amended) A ~~[[The]]~~ liquid crystal device element ~~according to claim 7 comprising:~~

a pair of parallel substrates;

conductive layers provided respectively on facing inner surfaces of these substrates;

liquid crystal alignment layers provided respectively with pre-tilt angle on facing inner surfaces of these conductive layers, and

a liquid crystal layer formed in between these pair of liquid crystal alignment layers,

wherein liquid crystal-soluble particles are dissolved or dispersed in the liquid crystal layer,

wherein each of the liquid crystal-soluble particles comprises a core having a diameter smaller than 100 nm and comprising one or a plurality of nanoparticles, and a protective layer comprising liquid crystal molecules or liquid crystal-like molecules provided on a periphery of the core,

wherein a control circuit of applying voltage, while modulating at least frequency

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among frequency and voltage, is provided on the conductive layer for varying light transmittance of the liquid crystal layer, and

wherein under a constant applied voltage, an electro-optical response is turned on by switching the frequency of applied electric field from low frequency to high frequency, and the electro-optical response is turned off by switching the frequency from high frequency to low frequency.

9. (original) The liquid crystal device element according to claim 8, wherein a time constant of response concerning turning the electro-optical response on and off is in a range of 0.1 ms to 10 ms.

10. (original) The liquid crystal device element according to claim 8, wherein a frequency modulation range of the electro-optical response is in a range of 20 Hz to 100 kHz.

11. (original) The liquid crystal device element according to claim 8, wherein the nanoparticle constituting the liquid crystal-soluble particle is at least one kind of metal atom selected from Ag, Pd, Au, Pt, Rh, Ru, Cu, Fe, Co, Ni, Sn and Pb.

12. (original) A method for driving a liquid crystal device element, wherein the liquid crystal device element according to claim 8 is driven by using an active matrix mode.

13. (new) The liquid crystal device element according to claim 8, wherein the

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short axis width of the liquid crystal molecule or liquid crystal-like molecule is equal to or less than the diameter of the core.